heated profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding, and wherein during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.

Remarks

I. Introduction

Claim 1 is pending in the present application. In view of the foregoing amendment, it is respectfully submitted that the presently pending claim is allowable, and reconsideration is respectfully requested.

II. Rejection of Claim 1 Under 35 U.S.C. §103(a)

Claim 1 rejected as being unpatentable under 35 U.S.C. §103(a) over U.S. Patent No 4,496,583 ("Yamamoto") in view of either U.S. Patent No. 5,232,595 ("Meyer") or U.S. Patent No. 4,876,007 ("Narou") and U.S. Patent No. 2,862,542 ("Norton"), and further in view of U.S. Patent No. 4,772,443 ("Thornton et al."), U.S. Patent No. 5,492,580 and German Patent No. 4,024,053 A1 (collectively "Frank") and U.S. Patent No. 3,616,167 ("Gosden"). Applicant respectfully submits that the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden does not render obvious the present claims for the following reasons.

Claim 1 relates to a method for manufacturing a pleated filter material from a thermally bonded non-woven fabric. Claim 1 recites that the method includes the step of forming a single fibrous web from undrawn and drawn synthetic fibers. In addition, claim 1 recites that the method includes the step of preheating the fibrous web. Claim 1 has been amended herein without prejudice to recite that the method includes the step of calendering the single fibrous web in a single calendering step without subsequent re-heating. Furthermore, claim 1 recites that, during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between non-heated profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding. In addition, claim 1 recites that, during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.

Thornton et al. purport to describe a fluid filter that is formed by

manufacturing an air laid batt containing randomly disposed structural fibers and a thermoplastic binder fiber. According to Thornton et al., the interstices between the fibers are fixed by applying a latex resin to the batt, thereby fixing the pore sizes of the filtering media before the filtering media is molded. Thornton et al. state that the filtering media is then molded into shape by using a plunger to tuck the media into an open cavity mold. Thornton et al. also state that the mold may be heated and pressure may be applied to the batt to mold the batt.

Frank purports to describe a method of making a moldable, nonwoven composite material. According to Frank, the method includes blending a mix of first fibers and second thermoplastic fibers, the second fibers having a melting point lower than that of the first fibers and comprising approximately 40-80 percent of the blend. Frank states that the blend is then processed into a fibrous batt, and the batt is then consolidated into a nonwoven structure with the first fibers being thoroughly intermixed with the second fibers. Frank also states that the nonwoven structure is then heated to a temperature below the melting point of the first fibers and above the melting point of the second thermoplastic fibers to substantially liquefy the second fibers and form a thermoplastic resin, and the heated nonwoven structure is compressed to flow the liquefied resin to displace air voids in the nonwoven structure and encapsulate the first fibers. Frank concludes that the nonwoven structure is cooled to form a composite material having substantially reduced air voids therein with the first fibers thoroughly encapsulated by the resin, and maintains that the composite material is substantially free from shrinkage when subjected to thermoforming.

Gosden purports to describe a yarn or fabric containing bicomponent staple fibers wherein the staple fibers comprise two components existing in a sheath/core relationship, the core component having a lower melting point than the sheath component. Upon heat treatment the core component softens and exudes from the cut end portions of the staple fibers and bonds to adjacent fibers on cooling.

The Final Office Action states that the claims are rejected "for the reasons of record set forth in Examiner's Answer in Paper No. 24 ... and for reasons of record set forth in Paper No. 38 numbered paragraph 2." Final Office Action at page 2. The Final Office Action also states that "[i]n response to Counsel's argument regarding Thornton et al, DE 4,024,53, Frank, and Gosden, these

references were cited to show that, it is conventional in diverse fields of art to preheat activated binder fibers to soften/melt the preheated fiber web to a desired configuration using a pair of unheated/cooling rollers [and] that Frank also teaches consolidating a fiber web using hot-calendering rolls as an alternative to the above process [wherein] this fiber web consolidation process is in fact similar, if not the same, process taught by Yamamoto et al." Final Office Action at pages 2 to 3. The Final Office Action contends that this is evidenced by "Thornton et al, drawn to making a thermally formed filter, discloses a prior art process where a fiber web is heated to a melting temperature of binder fibers and then compacted to a desired thickness using a pair of unheated rollers (col. 1 lines 45-57)." Final Office Action at page 2. The Final Office Action concludes that "absent any showing of unexpected benefit, it is taken to be well within the purview of choice in the art to choose from a limited number of known and effective ways of heat-activating undrawn (i.e. heat-activated binder) fibers and profiled rollers compressing a fiber web [because] none, but only the expected result (i.e. thermally activating undrawn (i.e. heat-activated binder) fibers in a web and consolidating the web to a desired configuration) would have been achieved." Final Office Action at page 3. The Final Office Action also contends that "neither Yamamoto et al nor Norton expressly teaches exerting any form of tension to a fibrous sheet during a calendering operation [and that] during the calendering operation using profiled calendar rolls taught by Norton, a fiber web is not subjected to any pulling or stretching operation; hence the web is compressed in a 'tension-free manner'." Final Office Action at page 3. The Final Office Action also contends that "using non-heated profiled calendar rolls ... would have been obvious in the art, because it is conventional in diverse fields of art to preheat a fiber web to soften/metal undrawn (i.e.heat-activated binder) fibers in the web, and then to consolidate the preheated web using unheated profiled rolls [because] none, but only the expected result (i.e. heat-activating undrawn fibers in a fibrous web so that fibers in the web can be bonded and configured to a desired shape) would have been achieved." Final Office Action at page 3. In addition, the Final Office Action states that "Yamamoto et al teaches using heated calendar rolls to soften/melt undrawn (heat-activated binder) fibers so that the fibers in a web can be bonded and configured to a desired shape [and that it is the Examiner's position that] the recited three alternative ways to activate undrawn (i.e. heat-activated binder) fibers in a web and compress a web using profiled rollers were taken to be obvious in the art." Final

Office Action at page 4. The Final Office Action concludes that "[o]ne in the art would have readily understood and appreciated that it is not critical in the modified process of Yamamoto et al to use heated profiled rollers [and that] whether heating operation is performed before or during a compressing process using profiled rollers, and whether heated or unheated profiled rollers are used; what is important is to ensure that, the undrawn (heat-activated binder) fibers in a web are at a temperature of at least (preferably above) a softening temperature of the undrawn fibers to make them tacky, so that the fibers in the web can effectively be bonded and shaped to a desired configuration." Final Office Action at page 3 (emphasis in original).

Applicant respectfully submits that the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden does not render obvious claim 1 for at least the reason that the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden fails to teach or suggest, either separately or in combination, all of the limitations recited in claim 1. For example, the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden fails to teach or suggest, either separately or in combination, a method for manufacturing a pleated filter material that includes the step of calendering the single fibrous web in a single calendering step without subsequent re-heating, as recited in amended claim 1. According to the present invention, the Specification recites at page 2, lines 31 to 34 that "it is advantageous that the finished filter medium, after the spacers have been impressed in the only calendering process, does not have to be heated again." Emphasis added. The Specification further states at page 2, line 34 to page 5, line1, that "[r]etractive forces within the filter material which can lead to an unwanted deformation of the spacers are prevented following the manufacture and during the entire service life of the filter insert." In contrast, for instance, Yamamoto describes a process, e.g., Examples 17 to 23, in which "a paper-like sheet was formed at a speed of 12 m/min, dried at a temperature of 120°C and, then, wound up." Column 10, lines 28 to 30 (emphasis added). Thus, Yamamoto describes that, after a calendering step, heat is applied in order to dry the fiber sheet. Likewise, Meyer describes that "the drying of the filter layer and later the pleating is carried out thermally in such a way that the object temperature lies at least 20°C above the softening point of the lower melting point artificial fibers...". Column 3, line 67 to column 4, line 3 (emphasis added). In addition, Narou also describe that "the filtration membranes can be easily stuck to the filtration unit by .. a

method using an adhesive agent cross-linked by heat, a heat-seal method or the like." Column 9, lines 16 to 21. The additional cited references are not relied upon to disclose, nor do they disclose, a method for manufacturing a pleated filter material that includes the step of calendering the single fibrous web in a single calendering step without subsequent re-heating, as recited in amended claim 1.

To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Since the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden does not teach, or even suggest, all of the limitations of claim 1 as more fully set forth above, it is respectfully submitted that the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden does not render obvious claim 1.

It is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Final Office Action's generalized assertions that it would have been obvious to modify or combine the references do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> . . . .
>
> **Instead, th Examin r reli s on hindsight in r aching his**

> **obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the present Final Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Accordingly, the Office must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not the case here -- there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed," stating that:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed

> limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings.

In summary, it is respectfully submitted that the combination of Yamamoto, Meyer, Narou, Norton, Thornton et al., Frank and Gooden does not render obvious amended claim 1. It is therefore respectfully submitted that claim 1 is allowable for these reasons, and withdrawal of this rejection with respect to claim 1 is therefore respectfully requested.

III. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Version with Markings to Show Changes Made

IN THE CLAIMS:

Claim 1 has been amended without prejudice as follows:

1. (Four Times Amended) A method for manufacturing a pleated filter material from a thermally bonded non-woven fabric, comprising :

forming a single fibrous web from undrawn and drawn synthetic fibers;

pre-heating the fibrous web;

calendering the single fibrous web in a single calendering step without subsequent re-heating, wherein during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between non-heated profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding, and wherein during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.